**Deciding on the Surveillance Design and Data Collection Strategy**

As defined in the introduction, a SMSS is sampled-based but requires a continuous data collection system to address the need for near-real time mortality and cause of death data that are used for progress monitoring. In thinking through the appropriate design that would fulfill real-time, following the situational review (described in step 2), several options must be considered.

1. **Complete Reliance on the existing Civil Registration and Vital Statistics Systems** in combination with the RHIS data must be carefully reviewed and discussed. However, this option will likely be ruled out as CRVS and RHIS suffer major completeness and representativeness issues and it will take more resources and time to reach the level of functionality for accurate mortality data at national and subnational level. However, other options considered must include discussion on how these could rely on these existing systems, or be linked to and strengthen them.
2. **Repeated annual household mortality surveys:** This approach involves conducting a national mortality survey at regular intervals of no more than twelve months. The survey will identify births and deaths in the past-twelve months, conduct verbal autopsies on deaths identified and collect information on the population by age and sex. The same sample may be visited annually in a panel survey strategy, or a different sample drawn every time. While this approach may provide reasonable data, it has several limitations. It is costly as a rigorous survey will require careful mapping of selected clusters followed by the survey. It is often more top-down as it engages less with communities in a continuous collaboration. The risk of generating estimates that are not near-real time is high and highly dependent on how fast the data team operates. Furthermore, it does not establish a stable sample of communities on which to rely for rapid data collections from the community and doesn’t allow continuous monitoring of communities for disease outbreaks and pandemics.
3. An alternative and more popular approach consists of establishing a **continuous monitoring of vital events in randomly selected geographic clusters**. The selection of the clusters must be rigorously done from a complete sampling frame to ensure representativeness at the national and defined subnational areas. Within each geographic cluster, a resident community worker will be recruited, trained and equipped to monitor the community through active frequent household visits and report vital events such pregnancies, pregnancy outcomes and deaths. The community workers will collaborate with the community leaders to ensure completeness of reporting of vital events, enrollment of new households and linkage with the community health workers. Families of deaths identified are followed up with for verbal and social autopsy interviews for cause of death determination. A digital and information technology solution can be implemented to facilitate data capture and transfer and allow near-real-time access to the data for analysis and result generation. To ensure the completeness of events recording, the community workers may be engaged to conduct a retrospective event data recapture on an annual basis. The data recapture may be conducted by an external team if resources are available, making the system a dual recording system. Within a short period of time (about a month) data collectors will visit every household in a clusters to collect data on births and deaths that have occurred in the past twelve months. These events will then be matched with the event data reported by the community workers and analyzed to assess the level of completeness of the community reporting. These data are analyzed together to obtain more accurate estimates of annual mortality. Every 2-3 years, it would also be necessary to conduct a complete census of all cluster to update the population by age and sex. During this update, retrospective data on births and deaths would also be collected to further assess the surveillance data.

The clusters under surveillance can be easily linked with the existing CRVS to help strengthen the completeness of the CRVS. They may also be linked with the nearest health facilities. While the approach established a permanent worker within each selected community and engages continuously the communities, it also faces numerous challenges. It requires a well-motivated community worker, a clear identification of the boundaries of the geographic clusters, and continuous and active support of all data collectors. Another major challenge resides in the management of household individual IDs and the matching of events over time. Use of names of heads of households and additional household characteristics often help with this matching. However, by establishing a continuous sample of geographic clusters, it is easy to mobilize these clusters for additional data collection, monitor outbreaks and add-on surveillance of other programs. This approach is implemented by most countries that are currently implementing a SMSS.

This manual assumes that this approach is selected for the SMSS. All steps described refer to this option.

In summary, the surveillance and data collection strategy approach involves:

* Establishing a nationally and sub-nationally representative sample of clusters, with their maps and population by age and sex.
* Continuous community surveillance of pregnancy outcomes and deaths in each cluster by a resident worker.
* Annual retrospective data recapture by the resident worker or an external team, implying a dual recording approach.
* Follow-up of all deaths identified to implement verbal and social autopsy interviews for cause of death determination.
* Update of the cluster population every 2-3 years.
* Implementation of a digital and information technology solution to facilitate real-time data collection, analysis and dissemination.
* Development of strategies for linking/integrating with existing surveillance systems such the CRVS and RHIS
* In designing the SMSS, a strategy for facilitating linkage or integration with CRVS is ensuring that vital events data collection forms are compatible with the CRVS forms. Linking each SMSS cluster to a designated administrative civil registration post and health facility will also help facilitate data linkage and flow.